CLAIMS

What is claimed is:

1.   A motion control system having a set of control
nodes each corresponding to an axis of the motion
control system, each control node having a
synchronized clock and each applying a series of
control values to an actuator for the corresponding
axis such that the control nodes coordinate
application of the control values to the actuators
using the synchronized clocks.

2.   The motion control system of claim 1, wherein
each control node participates in a protocol for
synchronizing the synchronized clocks via a
communication link.

3.   The motion control system of claim 1, wherein
each control node associates each control value of
the corresponding series of control values to be
applied to the corresponding actuator to a time value
according to a motion control function for the
corresponding axis.

4.   The motion control system of claim 3, wherein
each control node triggers an application of each
control value to the corresponding actuator when the
corresponding time value equals a time provided by
the corresponding synchronized clock.

5.   The motion control system of claim 1, wherein
each control node includes a set of processing

resources which are scaled according to a motion control function for the corresponding axis.

6. A control node for a motion control system, the control node having a synchronized clock and having means for applying a series of control values to an actuator for a corresponding axis of the motion control system such that the application of the control values to the actuator is coordinated using

10   the synchronized clock.

7. The control node of claim 6, further comprising means for participating in a protocol for synchronizing the synchronized clock via a

15   communication link.

8. The control node of claim 6, further comprising means for associating each control value to be applied to the actuator to a time value according to

20   a motion control function for the corresponding axis.

9. The control node of claim 8, further comprising means for triggering an application of each control value to the actuator when the corresponding time

25   value equals a time provided by the synchronized clock.

10. The control node of claim 6, further comprising a set of processing resources which are scaled

30   according to a motion control function for the corresponding axis.

11. A motion control system, comprising:

a set of control nodes each corresponding to an
axis of the motion control system, each control node
having a synchronized clock and each applying a
corresponding series of control values to an actuator

5   for the corresponding axis such that the control
nodes coordinate application of the control values to
the actuators using the synchronized clocks;

selector node that determines a motion control
function to be applied to the axes by transferring a

10   message to each·control node that specifies the
series of control values to be applied by each
control node.

12.   The motion control system of claim 11, wherein

15   each message further specifies a starting time for
the motion control function.

13.   The motion control system of claim 11, wherein
each message specifies one of a set of tables in the

20   corresponding control node that holds a set of pre-
computed control values to be applied for the motion
control function.

14.   The motion control system of claim 13, wherein

25   the pre-computed control values in the tables are
generated by the control node.

15.   The motion control system of claim 13, wherein
the pre-computed control values in the tables are

30   generated by the selector node and distributed to the
control nodes.

16.   The motion control system of claim 11, wherein
each message specifies one or more equations to be

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used to generate the corresponding series of control
values to be applied for the motion control function.

17.   The motion control system of claim 11, wherein
each message contains the corresponding series of
control values to be applied for the motion control
function.